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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,029	03/11/2004	Nandagopal Venugopal	RIC-02-009	4644
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VERIZON PATENT MANAGEMENT GROUP 1515 N. COURTHOUSE ROAD SUITE 500 ARLINGTON, VA 22201-2909			EXAMINER KANG, SUK JIN	
			ART UNIT 2419	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/797,029	Applicant(s) VENUGOPAL ET AL.	
	Examiner SUK JIN KANG	Art Unit 2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/7/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement submitted on April 7, 2004 has been considered by the Examiner and made of record in the application.

Claim Objections

2. Claims 24-30 are objected to because of the following informalities: on line 1 of claims 24-30, replace "machine-readable medium" with --computer-readable medium-- in order to maintain consistency with the rest of the disclosure. Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claim 24-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 24 states, "A machine-readable medium having recorded thereon instructions for at least one processor, the instructions comprising instructions for the at least one processor..." Upon reading applicant's specification, it clearly states, "A computer-readable medium may include one or more memory devices and/or *carrier waves*". Since the machine-readable medium could be considered an electromagnetic signal, the subject matter claimed in Claim 24 is again

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deemed non-statutory subjected matter. Appropriate correction to the specification is required.

5. Claims 25-30 are rejected under 35 U.S.C. 101 because its failure to resolve the deficiency of Claim 24.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1, 3, 14, 15, 19, 20, and 23-25** are rejected under 35 U.S.C. 102(b) as being anticipated by **Gardner et al.** (hereinafter Gardner) (Non-Patent Literature - "Techniques for Finding Ring Covers in Survivable Networks").

Consider **claims 1 and 16**, Gardner discloses a processor-implemented method for designing a ring cover candidate (page 1 column 2 lines 19-24) for a network, comprising: receiving network configuration information (page 2 column 1 line 35, input a network N) and traffic demand information (page 2 column 1 lines 24-27, link traffic weight) for the network; and generating the ring cover candidate (page 1 column 2 lines 19-24), including a plurality of rings (page 1 column 2 lines 5-6), based on the network configuration information and the traffic demand information, each of the rings including a plurality of network spans (page 2 column 1 lines 36-38, page 2 column 2 lines 4-14).

Consider **claim 3**, Gardner discloses creating a spanning tree from a plurality of loaded spans of the network (page 1 column 2 lines 32-43).

Consider **claim 14**, Gardner discloses wherein: the generating the ring cover candidate includes generating a plurality of ring cover candidates (page 1 column 2 lines 19-31), and the method further comprises: comparing the plurality of the ring cover candidates; and selecting one of the plurality of ring cover candidates as a recommended ring cover candidate (page 3 column 1 lines 26-40).

Consider **claim 15**, Gardner discloses wherein the selecting one of the ring cover candidates comprises selecting one of the ring cover candidates having a highest number of loaded spans (page 2 column 1 lines 22-38).

Consider **claim 19**, Gardner discloses wherein the at least one processor is further configured to store each of the rings of the at least one ring cover candidate in span linked lists associated with ones of a plurality of network spans of the network covered by the rings in the at least one storage device (page 1 column 2 lines 24-31).

Consider **claim 20**, Gardner discloses wherein the at least one processor is further configured to generate a plurality of ring cover candidates by using a different process to generate each of the ring cover candidates (page 1 column 2 lines 19-31, page 3 column 1 lines 26-40).

Consider **claim 23**, Gardner discloses a system for identifying at least one ring cover candidate (page 1 column 2 lines 19-24) for a network, comprising: means for receiving network configuration information (page 2 column 1 line 35, input a network N) and information representing predicted traffic demand for the network (page 2 column 1

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lines 24-27, link traffic weight); means for generating a plurality of ring cover candidates (page 1 column 2 lines 19-24), including a plurality of rings (page 1 column 2 lines 5-6), based on the network configuration information and the information representing predicted traffic demand, each of the rings including a plurality of network spans (page 2 column 1 lines 36-38, page 2 column 2 lines 4-14); and means for comparing the ring cover candidates and selecting one of the ring cover candidates as a recommended ring cover candidate (page 3 column 1 lines 26-40).

Consider **claim 24**, Gardner discloses a machine-readable medium having recorded thereon instructions for at least one processor, the instructions comprising instructions for the at least one processor: to generate a plurality of ring cover candidates (page 1 column 2 lines 19-24) for a network by using a different procedure to select a respective plurality of rings (page 1 column 2 lines 5-6) for each of the ring cover candidates (page 1 column 2 lines 19-31, page 3 column 1 lines 26-40), the generation of the ring cover candidates being based on configuration information (page 2 column 1 line 35, input a network N) and information representing predicted traffic demand associated with the network (page 2 column 1 lines 24-27, link traffic weight), each of the rings including a plurality of network spans (page 2 column 1 lines 36-38, page 2 column 2 lines 4-14); and to compare the ring cover candidates and select one of the ring cover candidates as a recommended ring cover candidate based on the predicted traffic demand of network spans covered by each of the ring cover candidates (page 3 column 1 lines 26-40).

Consider **claim 25**, Gardner discloses to create a spanning tree based on loaded ones of the network spans (page 1 column 2 lines 32-43), to generate a plurality of fundamental rings based on the spanning tree, and to generate a plurality of rings based on the generated fundamental rings (page 3 column 2 lines 2-5 and 13-15).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. **Claims 2, 9-13, 17, and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gardner et al.** (hereinafter Gardner) (Non-Patent Literature - "Techniques for Finding Ring Covers in Survivable Networks") in view of **Chow et al.** (hereinafter Chow) (U.S. Patent # 7,133,410 B2).

Consider **claim 2**, Gardner discloses the claimed invention, but may not expressly disclose generating and outputting at least one report describing characteristics of the ring cover candidate.

Nonetheless, in the same field of endeavor, Chow discloses generating and outputting at least one report describing characteristics of the ring cover candidate (column 3 lines 7-11, column 6 lines 48-55, column 13 lines 56-60).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate outputting a report describing characteristics of the ring cover candidate as taught by Chow with the method as disclosed by Gardner for the purpose of effectively designing a ring cover candidate.

Consider **claim 9**, Chow further discloses wherein the at least one report includes characteristics of each of the rings included in the ring cover candidate (column 3 lines 7-11, column 6 lines 48-55, column 13 lines 56-60).

Consider **claim 10**, Chow further discloses wherein the characteristics of each of the rings include a ring identifier, a number of nodes covered by a corresponding one of

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the rings, and a length of the corresponding one of the rings (column 3 lines 7-11, column 6 lines 48-55, column 13 lines 56-60).

Consider **claim 11**, Chow further discloses wherein the at least one report includes information about network spans not covered by any valid ones of the rings of the ring cover candidate (column 3 lines 7-11, column 6 lines 48-55, column 13 lines 56-60).

Consider **claim 12**, Chow further discloses wherein the at least one report includes information about network spans not covered by any ones of the rings of the ring cover candidate (column 3 lines 7-11, column 6 lines 48-55, column 13 lines 56-60).

Consider **claim 13**, Chow further discloses wherein: the generating the ring cover candidate includes generating a plurality of ring cover candidates, and the at least one report provides characteristics of each of the plurality of ring cover candidates.

Consider **claim 17**, Chow further discloses wherein the at least one processor is configured to generate a report describing characteristics of the at least one ring cover candidate (column 3 lines 7-11, column 6 lines 48-55, column 13 lines 56-60).

Consider **claim 30**, Chow further discloses to generate at least one report that describes characteristics of at least one of the ring cover candidates (column 3 lines 7-11, column 6 lines 48-55, column 13 lines 56-60).

10. **Claims 4-8, 18, 21, and 26-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gardner et al.** (hereinafter Gardner) (Non-Patent Literature -

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"Techniques for Finding Ring Covers in Survivable Networks") in view of **Kennington et al.** (hereinafter Kennington) (Non-Patent Literature - "Optimization Based Algorithms for Finding Minimal Cost Ring Covers in Survivable Networks").

Consider **claim 4**, Gardner discloses the claimed invention, but may not expressly disclose generating a plurality of second rings by combining two of the plurality of first rings; and generating a plurality of third rings by combining one of the second rings with one of the first rings.

Nonetheless, in the same field of endeavor, Kennington discloses generating a plurality of second rings by combining two of the plurality of first rings; and generating a plurality of third rings by combining one of the second rings with one of the first rings (page 3 lines 12-20, figure 1).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate generating a plurality of rings as taught by Kennington with the method as disclosed by Gardner for the purpose of effectively designing a ring cover candidate.

Consider **claim 5**, Kennington further discloses wherein the generating a plurality of third rings comprises generating derived third degree rings and focused third degree rings (page 3 lines 12-20, page 4 lines 1-9).

Consider **claim 6**, Kennington further discloses wherein at least some of the third rings and the second rings are based on an invalid first ring (page 3 lines 1-20, page 4 lines 1-9).

Consider **claim 7**, Kennington further discloses storing information regarding the first rings, the second rings and the third rings in span-linked lists associated with respective ones of a plurality of network spans covered by the first rings, the second rings and the third rings (page 3 lines 12-20, figure 1, page 4 lines 1-9).

Consider **claim 8**, Kennington further discloses generating a third ring cover candidate by using cheapest ones of the rings from the first ring cover candidate (abstract, page 7 lines 18-23, page 8 lines 1-2).

Consider **claim 18**, Kennington further discloses wherein the at least one processor is configured to generate a plurality of rings for each of the at least one ring cover candidate, the plurality of rings including a plurality of fundamental rings (figure 2), a plurality of second degree rings, and a plurality of third degree rings (page 3 lines 12-20, figure 1, page 4 lines 1-9).

Consider **claim 21**, Kennington further discloses to generate a first ring cover candidate by using shortest ones of the rings formed on loaded network spans, to generate a second ring cover candidate by using shortest ones of the rings formed on a maximum number of uncovered network spans, and to generate a third ring cover candidate by using shortest ones of the rings from the first ring cover candidate (page 3 lines 1-20, page 4 lines 1-9).

Consider **claim 26**, Kennington further discloses wherein the plurality of rings based on the generated fundamental rings (figure 2) include at least one of second degree rings and third degree rings (page 3 lines 12-20, figure 1, page 4 lines 1-9).

Consider **claim 27**, Kennington further discloses to attempt to create a focused third degree ring to cover a network span when the network span is covered only by an invalid fundamental ring (page 3 lines 1-20, page 4 lines 1-9).

Consider **claim 28**, Kennington further discloses wherein: the plurality of rings based on the generated fundamental rings (figure 2) are formed by combining a fundamental ring with another of the rings, and the fundamental ring and the another of the rings have a network span in common (page 3 lines 1-20, page 4 lines 1-9).

11. **Claims 22 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gardner et al.** (hereinafter Gardner) (Non-Patent Literature - "Techniques for Finding Ring Covers in Survivable Networks") in view of **Grover et al.** (hereinafter Grover) (U.S. Patent # 6,819,662 B1).

Consider **claims 22 and 29**, Gardner discloses the claimed invention, but may not expressly disclose wherein the at least one processor is further configured to rank each of a plurality of rings included in the at least one ring cover candidate, the rank being based on a measure of a benefit of including a respective ring in the at least one ring cover candidate versus a measure of a cost of including the respective ring in the at least one ring cover candidate.

Nonetheless, in the same field of endeavor, Grover discloses wherein the at least one processor is further configured to rank each of a plurality of rings included in the at least one ring cover candidate (column 14 lines 19-31), the rank being based on a measure of a benefit of including a respective ring in the at least one ring cover

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candidate versus a measure of a cost of including the respective ring in the at least one ring cover candidate (abstract, column 15 lines 1-15).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate ranking each of a plurality of rings as taught by Grover with the method as disclosed by Gardner for the purpose of effectively designing a ring cover candidate.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

13. Any response to this Office Action should be **faxed to (571) 273-8300 or mailed to:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

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Randolph Building
401 Dulany Street
Alexandria, VA 22314

14. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Suk Jin Kang whose telephone number is (571) 270-1771. The examiner can normally be reached on Monday - Friday 8:00-5:00 EST.

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If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Chirag Shah can be reached on (571) 272-3144. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

*/Suk Jin Kang/
Examiner, Art Unit 2619*

September 23, 2008

*/Chirag G. Shah/
Supervisory Patent Examiner, Art Unit 2619*